

2007-VISVESVARAYA TECHNOLOGICAL UNIVERSITY

B.E MODEL EXAMINATION

BASIC ELECTRICAL ENGINEERING

(ELECTRICAL AND ELECTRONICS ENGINEERING)

**TIME-3HOUR
MARK-80**

ANSWER ANY FIVE QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

1a) Show that the equivalent resistance of two resistors connected in parallel is the ratio of the product of those two resistances divided by the sum of those two resistance values.

b) Explain the Fleming's rules as applied to the production of EMF and Torque.

c) Problem on electro – magnetism / D.C. circuits.

2a) With usual notations show that the average power consumed by a pure capacitor is zero.

b) With reference to an a.c circuit, differentiate between

i) Phase and Phase difference, ii) Reactance and Impedance,

iii) lag and lead power factors.

c) Problem on single phase a.c circuit.

3a) Obtain the relationship between the line and phase quantities of balanced Star or Delta loads.

b) In the course of measurement of power in three phase circuits the watt meter readings are related as follows. Find the power factor when, i) $W_1 = W_2$, ii) $W_1 = 2W_2$, iii) $W_1 = 0.6$

c) Problem on three phase circuit.

4a) With a neat sketch explain the working of a single phase energy meter

b) Write a brief note on fuse.

c) Explain what is Earthing and with a neat sketch explain the plate Earthing

5a) With usual notation derive an expression for the induced E.M.F of a D.C. machine

b) Draw the typical Speed - load characteristics of a D.C. series motor and comment on its shape. Mention its practical applications.

c) Problem on D.C. Generator or D.C. Motor.

6a) With usual notations derive an expression for the induced EMF in a single phase Transformer and define the term transformation ratio.

b) List out the various losses in a transformer and explain how they vary with load and how they are minimized.

c) Problem on transformer.

7a) Explain the Salient and Non Salient pole generators and where they are preferred.

*b) List out the various losses in an ac generator and how its efficiency is estimated.

c) Problem on alternator.

8a) Define the term 'slip' in an Induction motor and explain its importance.

b) Explain the necessity of a starter for an Induction motor.

c) Problem on Induction motor.

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